

TITLE

[0001] DRYER SHEET AND CLEANSING ARTICLE DISPENSING CARTONS AND
DIE-CUT BLANKS FOR MAKING THE SAME

BACKGROUND

[0002] The disclosure herein relates to folding carton blanks and cartons for dispensing cleansing articles such as dryer sheets, pocket handkerchiefs, napkins, facial tissues, powdered surfactants, detergents, and wet wipes.

SUMMARY

[0003] Novel carton blanks, cartons and methods for making the same are disclosed.

BRIEF DESCRIPTION OF THE DRAWINGS

[0004] **FIG. 1** is a top view of a carton blank with a glue flap adjacent to a major panel, reverse cuts on the top panel running from multiple endpoints, zipper cuts on the front panel, and a hinge coincident with a panel score line.

[0005] **FIG. 2** is a top view of a carton blank similar to **FIG. 1** and including a finger notch.

[0006] **FIG. 3** is a top view of a carton blank with a glue flap adjacent to a major panel, reverse cuts on the top panel running from common endpoints, zipper cuts on the front panel, and a hinge coincident with a panel score line.

[0007] **FIG. 4** is a top view of a carton blank similar to **FIG. 3** and including a finger notch.

[0008] **FIG. 5** is a top view of a carton blank with a glue flap adjacent to a major panel, zipper cuts on the front and top panels, and a hinge coincident with a panel score line.

- [0009] **FIG. 6** is a top view of a carton blank similar to **FIG. 5** and including a finger notch.
- [0010] **FIG. 7** is a top view of a carton blank with a glue flap adjacent to a major panel, reverse cuts on the front and top panels running from multiple end points, and a hinge coincident with a panel score line.
- [0011] **FIG. 8** is a top view of a carton blank similar to **FIG. 7** and including a finger notch.
- [0012] **FIG. 9** is a top view of a carton blank with a glue flap adjacent to a major panel, reverse cuts on the front and top panels running from common end points, and a hinge coincident with a panel score line.
- [0013] **FIG. 10** is a top view of a carton blank similar to **FIG. 9** and including a finger notch.
- [0014] **FIG. 11** is a top view of a carton blank with a glue flap adjacent to a major panel, zipper cuts on the front and top panels, and a hinge not coincident with a panel score line.
- [0015] **FIG. 12** is a top view of a carton blank similar to **FIG. 11** and including a finger notch.
- [0016] **FIG. 13** is a top view of a carton blank with a glue flap adjacent to a major panel, reverse cuts on the front and top panels running from multiple end points, and a hinge not coincident with a panel score line.
- [0017] **FIG. 14** is a top view of a carton blank similar to **FIG. 13** and including a finger notch.
- [0018] **FIG. 15** is a top view of a carton blank with a glue flap adjacent to a major panel, reverse cuts on the front and top panels running from common end points, and a hinge not coincident with a panel score line.

- [0019] **FIG. 16** is a top view of a carton blank similar to **FIG. 15** and including a finger notch.
- [0020] **FIG. 17** is a top view of a carton blank with a glue flap adjacent to a major panel, reverse cuts on the top panel running from multiple endpoints, zipper cuts on the front panel, and a hinge not coincident with a panel score line.
- [0021] **FIG. 18** is a top view of a carton blank similar to **FIG. 17** and including a finger notch.
- [0022] **FIG. 19** is a top view of a carton blank with a glue flap adjacent to a major panel, reverse cuts on the top panel running from common endpoints, zipper cuts on the front panel, and a hinge not coincident with a panel score line.
- [0023] **FIG. 20** is a top view of a carton blank similar to **FIG. 19** and including a finger notch.
- [0024] **FIG. 21** is a top view of a carton blank with a glue flap adjacent to a minor panel, reverse cuts on the top panel running from multiple endpoints, zipper cuts on the front panel, and a hinge coincident with a panel score line.
- [0025] **FIG. 22** is a top view of a carton blank similar to **FIG. 21** and including a finger notch.
- [0026] **FIG. 23** is a top view of a carton blank with a glue flap adjacent to a minor panel, reverse cuts on the top panel running from common endpoints, zipper cuts on the front panel, and a hinge coincident with a panel score line.
- [0027] **FIG. 24** is a top view of a carton blank similar to **FIG. 23** and including a finger notch.
- [0028] **FIG. 25** is a top view of a carton blank with a glue flap adjacent to a minor panel, zipper cuts on the front and top panels, and a hinge coincident with a panel score line.

- [0029] **FIG. 26** is a top view of a carton blank similar to **FIG. 25** and including a finger notch.
- [0030] **FIG. 27** is a top view of a carton blank with a glue flap adjacent to a minor panel, reverse cuts on the front and top panels running from multiple end points, and a hinge coincident with a panel score line.
- [0031] **FIG. 28** is a top view of a carton blank similar to **FIG. 27** and including a finger notch.
- [0032] **FIG. 29** is a top view of a carton blank with a glue flap adjacent to a minor panel, reverse cuts on the front and top panels running from common end points, and a hinge coincident with a panel score line.
- [0033] **FIG. 30** is a top view of a carton blank similar to **FIG. 29** and including a finger notch.
- [0034] **FIG. 31** is a top view of a carton blank with a glue flap adjacent to a minor panel, zipper cuts on the front and top panels, and a hinge not coincident with a panel score line.
- [0035] **FIG. 32** is a top view of a carton blank similar to **FIG. 31** and including a finger notch.
- [0036] **FIG. 33** is a top view of a carton blank with a glue flap adjacent to a minor panel, reverse cuts on the front and top panels running from multiple end points, and a hinge not coincident with a panel score line.
- [0037] **FIG. 34** is a top view of a carton blank similar to **FIG. 33** and including a finger notch.
- [0038] **FIG. 35** is a top view of a carton blank with a glue flap adjacent to a minor panel, reverse cuts on the front and top panels running from common end points, and a hinge not coincident with a panel score line.

- [0039] **FIG. 36** is a top view of a carton blank similar to **FIG. 35** and including a finger notch.
- [0040] **FIG. 37** is a top view of a carton blank with a glue flap adjacent to a minor panel, reverse cuts on the top panel running from multiple endpoints, zipper cuts on the front panel, and a hinge not coincident with a panel score line.
- [0041] **FIG. 38** is a top view of a carton blank similar to **FIG. 37** and including a finger notch.
- [0042] **FIG. 39** is a top view of a carton blank with a glue flap adjacent to a minor panel, reverse cuts on the top panel running from common endpoints, zipper cuts on the front panel, and a hinge not coincident with a panel score line.
- [0043] **FIG. 40** is a top view of a carton blank similar to **FIG. 39** and including a finger notch.
- [0044] **FIG. 41** is a top view of a carton blank with a glue flap adjacent to a major panel, reverse cuts on the top panel running from multiple endpoints, zipper cuts on the front panel, a hinge coincident with a panel score line, and lacking a tuck tab score line.
- [0045] **FIG. 42** is a top view of a carton blank with a glue flap adjacent to a major panel, reverse cuts on the top panel running from multiple endpoints, zipper cuts on the front panel, a hinge not coincident with a panel score line, a finger notch, and lacking a tuck tab score line.
- [0046] **FIG. 43** is a top view of a carton blank with a glue flap adjacent to a minor panel, reverse cuts on the top panel running from multiple endpoints, zipper cuts on the front panel, a hinge coincident with a panel score line, and lacking a tuck tab score line.
- [0047] **FIG. 44** is a top view of a carton blank with a glue flap adjacent to a minor panel, reverse cuts on the top panel running from multiple endpoints, zipper

cuts on the front panel, a hinge not coincident with a panel score line, a finger notch, and lacking a tuck tab score line.

- [0048] **FIG. 45** is an isometric view of a carton made from the blank in **FIG. 1** in a closed configuration.
- [0049] **FIG. 46** is an isometric view of a carton made from the blank in **FIG. 2** in a closed configuration.
- [0050] **FIG. 47** is an isometric view of a carton made from the blank in **FIG. 1** in an open configuration.
- [0051] **FIG. 48** is an isometric view of a carton made from the blank in **FIG. 2** in an open configuration.
- [0052] **FIG. 49** is an isometric view of a carton made from the blank in **FIG. 4** in a closed configuration.
- [0053] **FIG. 50** is an isometric view of a carton made from the blank in **FIG. 5** in a closed configuration.
- [0054] **FIG. 51** is an isometric view of a carton made from the blank in **FIG. 6** in a closed configuration.
- [0055] **FIG. 52** is an isometric view of a carton made from the blank in **FIG. 7** in a closed configuration.
- [0056] **FIG. 53** is an isometric view of a carton made from the blank in **FIG. 8** in a closed configuration.
- [0057] **FIG. 54** is an isometric view of a carton made from the blank in **FIG. 16** in a closed configuration.
- [0058] **FIG. 55** is an isometric view of a carton made from the blank in **FIG. 17** in a closed configuration.

- [0059] **FIG. 56** is an isometric view of a carton made from the blank in **FIG. 20** in a closed configuration.
- [0060] **FIG. 57** is an isometric view of a carton made from the blank in **FIG. 21** in a closed configuration.
- [0061] **FIG. 58** is an isometric view of a carton made from the blank in **FIG. 24** in a closed configuration.
- [0062] **FIG. 59** is an isometric view of a carton made from the blank in **FIG. 25** in a closed configuration.
- [0063] **FIG. 60** is an isometric view of a carton made from the blank in **FIG. 26** in a closed configuration.
- [0064] **FIG. 61** is an isometric view of a carton made from the blank in **FIG. 27** in a closed configuration.
- [0065] **FIG. 62** is an isometric view of a carton made from the blank in **FIG. 36** in a closed configuration.
- [0066] **FIG. 63** is an isometric view of a carton made from the blank in **FIG. 37** in a closed configuration.
- [0067] **FIG. 64** is an isometric view of a carton made from the blank in **FIG. 40** in a closed configuration.
- [0068] **FIG. 65** is a perspective view of a carton made from the blank in **FIG. 1** in an opened configuration and filled with a plurality of sheet articles.

DETAILED DESCRIPTION

- [0069] The present disclosure relates to a folding box for dispensing articles, such as a cardboard box construction for dispensing dryer sheets, pocket handkerchiefs, napkins, facial tissues, or the like. The folding box may be of a rectangular- or hexahedral-shaped dispensing box. The box can be made

of a one piece, rigid, but foldable material. The carton or box can be folded to give four body-forming surfaces and two end closure surfaces.

[0070] One form of a folding box blank prepared from a sheet material and processed with a die is illustrated in **FIG. 1** as blank **10**. In describing this blank and other blanks, it should be understood that a blank has two opposite surfaces - an "outer" surface and an "inner" surface. The outer surface can be suitable for imprinted graphics and also corresponds to the outer surface of a carton. The inner surface can include graphics such as aesthetic design, color or graphics that might be associated with coupons or other promotional information, but otherwise may be an unprinted surface. Different inks and coatings, of course, produce different surface characteristics on the paperboard. Cartons can be constructed from the blanks by folding the blank manually or with the use of automated equipment. An example of a carton is illustrated in **FIG. 45** and generally denoted by reference numeral **60**.

[0071] COATINGS

[0072] Cartons and blanks can have films, laminations, and coatings on both, either, or neither of the inner and outer surfaces. Both the inner and outer surfaces may be coated with a film of material if desired. In the case of the outer surface, the coating can be chosen to be compatible with printing graphic inks for displaying labels, product information, pictures, and the like. In some instances, the outer surface may not have a coating, for example if labels and other packaging markings are applied by adhesive labels and the like. The inner surface may also be coated with a film as this may reinforce and preserve the integrity of the carton or blank material. In some instances, the inner surface will not have a coating.

[0073] The coating selected will depend upon the intended use for the container. By way of example, the inner surface may be coated with one-half millimeter of extruded or laminated low density polyethylene (LDPE) and one millimeter of

extruded or laminated high density polyethylene (HDPE). By way of another example, the inner surface may be coated with a millimeter of grease barrier. Also by way of example, the outer surface may be coated with a metalized polyester. Metalized polymers are especially helpful for giving printed materials on the outer surface a metallic or vibrant appearance for marketing purposes and reading clarity.

[0074] When a coating is applied to a surface of the blank/carton, it can provide a barrier to perfumes and surfactants. Furthermore, the coating can help strengthen a substrate material for example fiberboard. For example, when paperboard is used, it may include on the inside or outside a printed barrier obtained by fluorochemical treatment to provide wet strength for the flap. The thickness of the paperboard or other material may be whatever is desired such as a thickness in the range from 2 to 30 mils in thickness, or 18 to 22 mils in thickness preferably 20 point.

[0075] It is contemplated that a variety of substrate materials may be used for forming the cartons including raw and recycled fiberboard material, raw and recycled fibrous material, raw and recycled paperboard, raw and recycled plastics such as polyethylene, polypropylene, polybutylene, and any other material capable of receiving score lines. The substrate materials used can come pre-coated or a coating may be applied to the substrate at any time. Examples of pre-coated substrates include clay coated recycled paperboard, solid bleached sulfate paperboard, poly-coated solid bleached sulfate paperboard, foil-coated paperboard (recycled and virgin), film coated paperboard (such as metalized polyesters laminated to paperboard substrates), wax-coated paperboard, and various other kinds of paperboard that have been treated, e.g., with special additives such as grease inhibitors. Other examples of paperboard substrate include solid bleached board (SBB), solid unbleached board (SUB), folding box board (FBB), and white lined chipboard (WLC).

[0076] **BLANKS**

[0077] Die-cut carton blanks can be packaging container blanks of a selected shape and style provided with grooves, scores, perforations or cutting lines and, possibly, punched out portions. The blank is used to produce a carton or carton component. Blanks can also be referred to as any die cut, scored and corner cut section of a sheeted-substrate in a flat to be formed into a rigid box or part thereof. Blanks can also be referred to as a folding carton after cutting and scoring but before folding and gluing. Die-cut blanks can be manufactured at blanking stations in press machinery. A diecutting press allows automatic separation of the die cut blank from a sheet of substrate. A diecutting press with blanking and stripping stations can convert stacked sheets into stacked diecut blanks.

[0078] Turning to **FIG. 1**, a blank **10** is illustrated with primary score lines **111**, **112**, **113**, **114**, **115**, and **116**. The blank **10** also includes two cutoffs **119** and **120**. The primary score lines (also called fold lines or creases) and cutoffs (also called the outer perimeter of the die line or outer perimeter) demarcate or otherwise perimetrically define various body-forming panels and flaps. Lapping glue flap **125** (also called glue flap or glue lap) is demarcated by score line **111** and cutoff **119**. Major panel **121** is demarcated by score lines **111**, **112**, **115**, and **116**. Score lines **115** and **116** also demarcate a separation between major panel **121** and a pair of major flaps **131** and **132** respectively. Minor panel **122** is defined by score lines **112**, **113**, **115**, and **116**. Score lines **115** and **116** also demarcate a separation between the minor panel and a pair of minor flaps **133** and **134** respectively. A second major panel **123** is demarcated by score lines **113**, **114**, **115**, and **116**. Score lines **115** and **116** demarcate a separation between second major panel **123** and a second pair of major flaps **135** and **136**. A second minor panel **124** is demarcated by score lines **114**, **115**, **116**, and cutoff **120**. Score lines **115** and **116** also demarcate a separation between a second pair of minor flaps **137** and **138**.

- [0079] The major and minor panels have been enumerated and sometimes referred to as first and second types of major and minor panels. It is contemplated for convenience and brevity that any first major panel could be called a second major panel and visa versa, while any first minor panel could be called a second minor panel and visa versa. This principle also applies when referring to flaps, fold lines, score lines, and the like. Such terminology usually depends on an artisan's reading frame for any given drawing.
- [0080] Depending upon the desired presentation and function of a package folded and formed from blank **10**, it may be convenient to refer to the various panels and flaps relative to their display orientation. In one desired orientation, panel **121** may be thought of as the "bottom" panel. Bottom panel **121** also has a first end wall or cover flap **131** and a second end wall or cover flap **132** separated from bottom panel **121** by score lines **115** and **116** respectively. Bottom panel **121** is adjacent a lapping glue flap **125** along score line **111**. Bottom panel **121** is also adjacent a "rear" panel **122** along score line **112**. Rear panel **122** has a first side wall **133** and a second side wall **134** and is separated from both by score lines **115** and **116** respectively. Adjacent the rear panel **122** along score line **113** is a "top" panel **123** having a first end wall or cover flap **135** and a second end wall or cover flap **136** separated from top panel **123** by score lines **115** and **116** respectively. Adjacent top panel **123** along score line **114** is a "front" panel **124**. The front panel **124** also has a first side wall **137** and a second side wall **138** separated from front panel **124** by score lines **115** and **116** respectively. Front panel **124** terminates at cutoff **120**. The lapping glue flap **125** adjacent the bottom panel **121** terminates at cutoff **119**.
- [0081] As displayed in **FIG. 1**, blank **10** includes major flaps **131**, **132**, **135**, and **136** which in this example have symmetrical appearance. Major flaps **131** and **132** are approximately equal in dimension to major flaps **135** and **136**. In this example, the dimensions of the major flaps are sufficiently elongated that they will overlap with one another when the carton made from the blank is

closed. In other examples, the dimensions of the major flaps can be shortened to dimensions corresponding to flaps that do not overlap when the assembled carton made from the blank is closed.

[0082] With respect to minor flaps **133, 134, 137, and 138**, it is unnecessary that these flaps have symmetrical appearance with each other. As seen in an example depicted in **FIG. 1**, each pair of minor flaps has a similar dimension but each minor flap pair differs in dimension to the other minor flap pair. The relative dimensional shape between pairs of minor flaps may differ to accommodate filling equipment which places articles in the assembled carton. Lapping glue flap **125** in this example has a trapezoidal shape. In other examples, the lapping glue flap may have a rectangular shape.

[0083] **PERFORATED RULES AND OTHER GLUE ASSISTS**

[0084] Perforated rules (or glue assists) and other affixing means for adhesive assistance augment the effectiveness of adhesives applied to carton and blank surfaces. Glue assists can involve techniques to break through the clay coating, varnish coatings, UV coatings or other types of barriers existing on a surface to which adhesive will be applied. In an example when the substrate surface is paperboard, glue assists can aid water soluble glue in penetrating through the soluble fibers of the inner core of the board. Perforated rules can be created in a carton or blank surface by a series of knives placed into a die. These knives are set at different heights corresponding to the amount of penetration into the substrate surface. Perforated rules can be of a variety of styles such as dashes, hashes, x-type, and so forth. Perforated rules can be created from any multitude of combinations of teeth & spaces in millimeters and in inches at any desired depth so long as the depth does not penetrate through the entire blank material.

[0085] In some examples, affixing means for adhesive assistance are provided. The affixing means for adhesive assistance may exist on one or more of any

end closure flap, lapping glue flap, and inner surface of a body-forming panel. In some examples, perforated rules exist on one or more of any end closure flap, lapping glue flap, and inner surface of a body forming panel.

- [0086] A perforated rule cut can give the glue more adhesion between two glued surfaces. The perforated rules also add to the actual surface area that the glue has to adhere to. This exposed area must be formed in a way that exposes fibers or furrows that stay open through the gluing process. When the substrate surface has a grain, a cross grain cut will tend to stay open were a with grain cut will tend to close. Another example of glue assists arises from laser etched surfaces. Laser etching removes at least a portion of a coating material on a glueable area of the carton blank.
- [0087] Another feature appearing in **FIG. 1** is a plurality of perforated rules (or glue assists) **180**. Perforated rules in blank **10** are found in major flaps **131** and **132**, minor flaps **133**, **134**, **137**, and **138** and in lapping glue flap **125**. Perforated rules **180** are generally understood in the art to be a series of cuts or punches which allow an applied glue to adhere to more than the surface of a flap or panel. The perforated rules enable the applied glue to adhere to a fiberboard material or other suitable substrate material that may be untreated or that may be coated with films.
- [0088] The variety of styles and forms of perforated rules may also be referred to as affixing means for adhesive assistance. The affixing means provided on the carton blanks depicted can be generally referred to also as adhesive means **180**. The use of perforated rules and affixing means for adhesive assistance are optionally included in the blanks herein described. For brevity, all depicted examples are depicted as having perforated rules on all flaps which are to receive glue on the exterior surface. The perforated rules enhance the security of the assembled cartons' structure and improve longevity. However, it is contemplated that in all the blanks/cartons herein depicted, the

blanks/cartons could be prepared without the perforated rules (or affixing means for adhesive assistance) and assembled into corresponding cartons.

[0089] ACCESS FLAP & REVERSE CUTS

- [0090] The folding cartons and blanks include a fully enclosed access flap (or access hatch or access panel) which may be opened and closed by a consumer. The access hatch enables a consumer to open a portion of the container with a human hand and remove articles in the container followed by closing the hatch with minimal effort. When the access flap is opened, the carton 1 is capable of dispensing sheeted fabric softening articles or sheeted cleaning articles. Furthermore, the access hatch together with the other panels and flaps enclose the articles in the container during shipping and storage. A fully enclosed access flap may be formed and located within the combined surfaces of two body-forming panels thereby being fully enclosed by those same body-forming panels.
- [0091] The access flap may be demarcated by a plurality of lines of separation (also called spaced apart lines of separation, lines of weakness, tear lines, weakened lines of separation, pre-weakened portions of a panel, cuts, and perforation cuts). The lines of separation may demarcate portions of an access flap so that when the lines of separation are severed, a fully enclosed access flap may be movable between a closed position closing an access opening into the interior of a carton and an open position allowing the insertion of a human hand to retrieve various desired articles from the interior of the carton. In addition, the access flap may be rectangular-, hexagonal-, or irregular hexagonal-shaped.
- [0092] In the preceding paragraphs, the enumerated features associated with blank 10 have been described relative to the score lines which define portions of the blank and along which they are folded during the construction of the container. The example of blank 10 also includes an access flap 150 which can be defined by lines of separation 151, 152, 153, 154, 157 and 158.

Lines **151, 152, 153, 154** are two pairs of partially die cut (or reverse cut or half cut or reverse out or half out or double-cut scores) lines. In the example depicted in **FIG. 1**, lines **151** and **153** appear substantially parallel and spaced apart by about ¼ inch (or 0.6 cm) and constitute one flank of the access flap **150**. Lines **152** and **154** also appear substantially parallel and spaced apart by about ¼ inch (or 0.6 cm), and again constitute another flank of the access flap **150**. The reverse cuts can taper to a common point such as **159** and **160**. In this example, lines **151** and **152** are partial cuts through the outer surface of the blank **10** while lines **153** and **154** are partial cuts through the inner surface or opposite side of the blank **10**. Lines **151** and **152** as displayed in blank **10** are on the outer perimeter portion of the access flap **150** while lines **153** and **154** are on the inner perimeter portion of the access flap **150**.

[0093] In another example, (not illustrated) line **151** can be interchanged with line **153** and line **152** can be interchanged with line **154** so that the outside surface cut is on the inner perimeter portion of the access flap and the inside cut is on the outer perimeter portion of the access flap. In yet another example, (not illustrated) line **151** can be coincident with score line **115** and line **152** can be coincident with score line **116**.

[0094] In the example depicted in **FIG. 1**, lines **151** and **153** run from line end points **141** and **143** respectively to conjoin or otherwise meet at a first tear point **159**. Lines **152** and **154** run from line end points **142** and **144** respectively to conjoin or otherwise meet at a second tear point **160**. In blank **10**, tear points **159** and **160** are coincident with score line **114** and line end points **141, 142, 143,** and **144** are coincident with score line **113**. The tear points and line end points can be coincident with score lines or can be at locations not coincident with score lines. Examples with tear points and line end points at various positions are contemplated and discussed more fully hereafter.

[0095] ACCESS FLAP AND ZIPPER CUTS

[0096] Another example of a cut which may demarcate the access flap is a zipper cut. Zipper cuts (also called zipper rules, staggered perforated cut lines, tear edges, and tear rules) conveniently control the direction of tear through the substrate material. Zipper cuts exist in a variety of styles that vary in angle, length, and gap between cuts and may be selected according to requirements such as thickness of the material, grain direction, and other criteria. In addition, zipper cuts conveniently assist reclosure of an access flap when the access flap is tucked behind the side edges of a panel. This forms a latching and sealing action minimizing inadvertent opening of the reclosed carton during subsequent handling.

[0097] Again, referring to the example depicted in **FIG. 1**, the access flap **150** is further demarcated by lines of separation **157** and **158** which are zipper cuts through the outer and inner surfaces of blank **10**. In this example, the zipper cut lines **157** and **158** can be characterized by “herringbone” foraminations or slit lines in the separating lines of the access flap. Other examples (not illustrated for brevity) of zipper cut style may be applicable to the blanks and cartons.

[0098] **TUCK TAB**

[0099] In some examples, the blanks/cartons have a tuck tab (or lip). A tuck tab may constitute or further define one flank of an access flap and usually the flank which can be partially or completely concealed behind a panel when the access flap is reclosed. A tuck tab may also function to assist the consumer when initially opening the container. A tuck tab itself may be demarcated itself by a tuck tab cut extending between a plurality of spaced apart lines of separation. The tuck tab may also be demarcated by a score line such as a tuck tab score. In some examples, the tuck tab score is colinear with portions of a tuck tab cut.

[00100] Returning to the example displayed in **FIG. 1**, the blank **10** further includes a tuck tab **170**. The tuck tab **170** in this example is demarcated by tuck tab

score line **171** and tuck tab cut **172**. Tuck tab cut **172** extends between first and second tuck tab score line end points **173** and **174** which can be coaxial with tuck tab score line **171**. Line **157** runs between tuck tab end point **173** and tear point **159**. Line **158** runs between tuck tab end point **174** and tear point **160**.

[00101] In some examples, the tuck tab is not perimetrically defined by visible lines of demarcation. Referring to the example in **FIG. 41**, a blank **50** is displayed with an alternative tuck tab (or lip end) **179**. As can be seen, the example of blank **50** differs from the example of blank **10** in that blank **50** does not have tuck tab score line **171**. Instead, the access flap **150** illustrated in **FIG. 41** includes a lip end **179** demarcated by cut **172**. It is contemplated that blank and carton configurations which lack the tuck tab score line **171** will be preferable for erected cartons with smaller quantities of articles and shorter minor panels.

[00102] In some examples, one or more of spaced apart lines of separation form an obtuse angle with a tuck tab score line. In other examples, one or more of spaced apart lines of separation form a perpendicular angle with a tuck tab score line.

[00103] SEGMENTS

[00104] Blank **10** and other exemplary blanks described herein can be described as including lines of separation divided up into a plurality of definable segments. As can be observed in **FIG. 1**, four segments **165**, **166**, **167**, and **168** are displayed around the perimeter of access flap **150**. One segment **165** incorporates lines of separation **151** and **153** which each stretch from a first point to a second point. Segment **165** may be termed the first side first segment of lines of separation. A second segment **165** incorporates lines of separation **152** and **154** which also each stretch from a first point to a second point. Segment **166** may be termed the second side first segment of lines of separation. A third segment **167** corresponds in distance between first and

second points of line **157** and may be termed the first side second segment of lines of separation. A fourth segment **168** corresponds in distance between first and second points of line **158** and may be termed the second side second segment of lines of separation. As can be appreciated from the drawings and description herein, the segments **165**, **166**, **167**, and **168** correspond merely to the whichever type of line of separation is selected to span a given distance.

[00105] In one example, a fully enclosed access flap is perimetrically defined by a hinge, a pair of segments that may be partial cuts, a pair segments that may be zipper cuts, and a tuck tab cut.

[00106] FINGER NOTCH

[00107] In some examples, the blanks/cartons have a finger notch. A finger notch may facilitate grasping of a tuck tab or an end of an access flap to assist a consumer in opening the erected carton. In some examples the finger notch may be defined by an arcuate cut beginning at a finger notch cut point substantially coincident with a tuck tab cut and ending at a second finger notch cut substantially coincident with the tuck tab cut.

[00108] Referring to the example depicted in **FIG. 2**, blank **11** includes the features of blank **10** and a finger notch (or finger tab or thumb tab or access flap assistance tab) **175**. The finger notch **175** is demarcated by a finger notch cut **176** which intersects the tuck tab cut **172** at a first finger notch end point **177** and a second finger notch end point **178**. In the example depicted in **FIG. 2**, the finger notch **175** appears hemispherical- (or arch-) shaped; however, the finger notch can take the form of other shapes (for brevity, not depicted) including squares, rectangles, polygons, irregular polygons, ellipsoids, and ovals so long as the shape provides space for a finger or instrument to grasp the tuck tab **170**. Again referring to example in **FIG. 2**, it is contemplated that lapping glue flap **125** can extend behind the entire gap of finger notch **175** area and further extend behind the tuck tab **170**. In other

examples (not depicted) the lapping glue flap **125** can extend behind the entire gap of finger notch **175** area and not substantially extend behind the tuck tab **170**.

[00109] VARIATIONS OF THE ACCESS FLAP

[00110] The access flap for the blanks/cartons can have a variety of appearances and properties. These properties can vary depending upon the nature of the lines of separation which perimetrically demarcate the access flap.

[00111] In one example depicting blank **12** in **FIG. 3**, the lines of separation can terminate at a common end points. Therein, lines **151** and **153** run from common line end point **145** to conjoin or otherwise meet at a first tear point **159**. Lines **152** and **154** run from common line end point **146** to conjoin or otherwise meet at a second tear point **160**. In blank **12**, tear points **159** and **160** are coincident with score line **114** and common line end points **145** and **146** are coincident with score line **113**. Blank **13** in **FIG. 4** displays an access flap **150** with common line end points **145** and **146** where the second minor panel **124** also includes a finger notch **175**.

[00112] In another example, the lines of separation may be continuous segments of zipper cuts. Turning to **FIG. 5**, a blank **14** has an alternative access flap **190** wherein the lines of weakness **191** and **192** are continuous zipper cuts running from line end points **145** and **146** to tuck tab end points **173** and **174** respectively. Blank **15** in **FIG. 6** displays an access flap **190** with common line end points **145** and **146** where the second minor panel **124** also includes a finger notch **175**.

[00113] In still another example, the lines of separation may be continuous segments of partially die cut lines. Turning to **FIG. 7**, a blank **16** has an alternative access flap **194** including lines of separation **195**, **196**, **197**, and **198**. Lines **195**, **196**, **197**, and **198** are two pairs of partially die cut lines. Lines **195** and **197** which are substantially parallel and spaced apart by about ¼ inch (or 0.6

cm) constitute one flank of the access flap **194**. Lines **196** and **198** which are also substantially parallel and spaced apart by about ¼ inch (or 0.6 cm) constitute another flank of the access flap **194**. Lines **195** and **196** are partial cuts through the outer surface of the blank **16** while lines **197** and **198** are partial cuts through the inner surface or opposite side of the blank **16**. Lines **195** and **196** as displayed in blank **16** are on the outer perimeter portion of the access flap **194** while lines **197** and **198** are on the inner perimeter portion of the access flap **194**. Blank **17** in **FIG. 8** is similar to blank **16** but also includes a finger notch **175**.

[00114] In like manner as mentioned in a previous example, lines **195** could be interchanged with line **197** and line **196** could be interchanged with line **198** so that the outside surface cuts are on the inner perimeter portion of the access flap and the inside cuts are on the outer perimeter portion of the access flap.

[00115] Now turning to blank **18** in **FIG. 9**, therein, lines **195** and **197** run from common line end point **145** to conjoin or otherwise meet at a first tear point **159**. Lines **196** and **198** run from common line end point **146** to conjoin or otherwise meet at a second tear point **160**. In blank **18**, tear points **159** and **160** are coincident with tuck tab score line **171** and common line end points **145** and **146** are coincident with score line **113**. The blank **19** illustrated in **FIG. 10** is similar to blank **18** and includes finger notch **175**.

[00116] The tear points and line end points can be coincident with score lines or can not be coincident with score lines. In one example (not depicted), tear points **159** and **160** are not coincident with score line **114**. In another example illustrated in **FIG. 11**, line end points **141** and **143** are not coincident with score line **113**, but are instead coincident with score line **117**. In still another example (not illustrated) line end points

[00117] HINGE

- [00118] A hinge demarcates one side of an access flap in the blanks and cartons. The hinge functions as a axial pivot along which the access flap pivots as the consumer opens and closes an erected carton.
- [00119] In the example depicted in **FIG. 1**, blank **10** contains a hinge **139** that is also coincident with score line **113**. Hinge **139** runs between line end points **141** and **142** while running perpendicular to score lines **115** and **116**. In another example, the hinge is not coincident with a panel separating score line. Referring to blank **20** in **FIG. 11**, hinge **140** traverses a portion of the second major panel **123** but is not coincident with score line **113**. Hinge **140** may be a die pressed score line which traverses panel **123** from score line **115** to score line **116** (not illustrated) or may be abbreviated (or shortened) such as score line **117** in blank **20**. Score line **117** runs from common line endpoint **147** to common line endpoint **148** in a substantially perpendicular orientation to score lines **115** and **116**. In other examples, the hinge **140** traverses a portion of the second major panel but at an angle to one of the score lines. In other examples, the hinge location and score line **117** can be placed in various locations across the second major panel **123** making the access flap larger or smaller.
- [00120] Now turning to the example blank **20** in **FIG. 11** has an abbreviated form of access flap **190** with hinge **140** coincident with score line **117**. Blank **21** in **FIG. 12** shows a similar blank further including a finger notch **175**.
- [00121] Blank **22** in **FIG. 13** has an abbreviated form of access flap **194** with hinge **140** coincident with score line **117** and a plurality of line end points **141**, **142**, **143**, and **144**. Blank **23** in **FIG. 14** shows a similar blank further including a finger notch **175**.
- [00122] Blank **24** in **FIG. 15** has an abbreviated form of access flap **194** with hinge **140** coincident with score line **117** and common line end points **147** and **148**. Blank **25** in **FIG. 16** shows a similar blank further including a finger notch **175**.

[00123] Blank **26** in **FIG. 17** has an abbreviated form of access flap **150** with hinge **140** coincident with score line **117** and a plurality of line end points **141**, **142**, **143**, and **144**. Blank **27** in **FIG. 18** shows a similar blank further including a finger notch **175**.

[00124] Blank **28** in **FIG. 19** has an abbreviated form of access flap **150** with hinge **140** coincident with score line **117** and common line end points **147** and **148**. Blank **29** in **FIG. 20** shows a similar blank further including a finger notch **175**.

[00125] LAPPING GLUE FLAP LOCATION

[00126] Before a carton is erected and filled with articles, a corresponding blank can be folded. In this process of preparing the blank, a lapping glue flap can be treated with an adhesive and brought into contact with another portion of the blank. The lapping glue flap's dimensions and location can be altered as needed. As disclosed in the examples, this lapping glue flap mechanically reinforces both the stability of the dispensing box but in some examples, also assists in reinforcing the front panel for consumer operation of the access flap.

[00127] By way of example, the lapping glue flap may adjoin different body-forming panels and be of different lengths. The lapping glue flap may be foldably attached along an edge of a body-folding panel. In many examples, the lapping glue flap overlaps at least a portion of a body-forming panel lateral to a fully enclosed access flap so that when a consumer separates the access flap from one or more of the body-forming panels to open a carton, the overlapped portion of the body-forming panel remains attached to the lapping glue flap. Furthermore, in these and other examples, the lapping glue flap overlaps at least a portion of a fully enclosed access flap.

[00128] As illustrated in the example of **FIG. 1**, blank **10** has a lapping glue flap **125** located next to the first major panel **121**. In another example depicted in

FIG. 21, blank **30** includes a major panel **121** demarcated by score lines **112**, **115** and **116** and by cutoff **127**. A second minor panel **124** is demarcated by score lines **114**, **115**, **116**, and **118**. Lapping glue flap **126** is demarcated by score line **118** and cutoff **128**. The arrangement of blank **30** differs from the previously described blank **10** in that the lapping glue flap **126** is now on the opposite end of the blank and adjacent to the second minor panel **124** along score line **118**.

[00129] Placement of lapping glue flap **126** in blank **30** will result in an assembled carton in which the lapping glue flap **126** is adhered to major panel **121**, whereas the arrangement placing the lapping glue flap **125** of blank **10** will result in an assembled carton in which the lapping glue flap **125** is adhered to minor panel **124**. In both blank **10** and blank **30**, the lapping glue flaps are adhered to the interior surface of the respective panels **124** and **121** respectively. In either arrangements depicted in **FIG. 1** and **FIG. 21**, the lapping glue flaps **125** and **126** could be adhered to the outside surface of panel **124** and panel **121** respectively. In another example, blank **31** illustrated in **FIG. 22**, shows the arrangement of lapping glue flap **126** adjacent to minor panel **124** and including a finger tab **175**.

[00130] In some examples such as blanks **10** and **30**, lapping glue flaps may span the entire width of a panel. In other examples (not illustrated for brevity) lapping glue flaps may span only a portion of the width of the a panel. In still other examples, a lapping glue flap can be capable of receiving a continuous glue seam in contrast with a glue seam that is interrupted. This is not to suggest that the glue seam that ultimately is applied must be continuous, only that the lapping glue flap itself can be continuous and uninterrupted so that a continuous glue seam can be applied.

[00131] Blank **32** illustrated in **FIG. 23**, shows the arrangement of lapping glue flap **126** adjacent to minor panel **124**, with access flap **150** and common line end

points **145** and **146**. Blank **33** illustrated in **FIG. 24** is similar to blank **32** and includes a finger tab **175**.

[00132] Blank **34** illustrated in **FIG. 25**, shows the arrangement of lapping glue flap **126** adjacent to minor panel **124**, with access flap **190**. Blank **35** illustrated in **FIG. 26** is similar to blank **34** and includes a finger tab **175**.

[00133] Blank **36** illustrated in **FIG. 27**, shows the arrangement of lapping glue flap **126** adjacent to minor panel **124**, with access flap **194** and a plurality of line end points **141**, **142**, **143**, and **144**. Blank **37** illustrated in **FIG. 28** is similar to blank **36** and includes a finger tab **175**.

[00134] Blank **38** illustrated in **FIG. 29**, shows the arrangement of lapping glue flap **126** adjacent to minor panel **124**, with access flap **194** and common line end points **145** and **146**. Blank **39** illustrated in **FIG. 30** is similar to blank **38** and includes a finger tab **175**.

[00135] Blank **40** illustrated in **FIG. 31**, shows the arrangement of lapping glue flap **126** adjacent to minor panel **124** with abbreviated access flap **190**. Blank **41** illustrated in **FIG. 32** is similar to blank **40** and includes a finger tab **175**.

[00136] Blank **42** illustrated in **FIG. 33** shows the arrangement of lapping glue flap **126** adjacent to minor panel **124**, with abbreviated access flap **194** and a plurality of line end points **141**, **142**, **143**, and **144**. Blank **43** illustrated in **FIG. 34** is similar to blank **42** and includes a finger tab **175**.

[00137] Blank **44** illustrated in **FIG. 35**, shows the arrangement of lapping glue flap **126** adjacent to minor panel **124**, with abbreviated access flap **194** and common line end points **145** and **146**. Blank **45** illustrated in **FIG. 36** is similar to blank **44** and includes a finger tab **175**.

[00138] Blank **46** illustrated in **FIG. 37**, shows the arrangement of lapping glue flap **126** adjacent to minor panel **124**, with abbreviated access flap **150** with hinge

140 and a plurality of line end points **141**, **142**, **143**, and **144**. Blank **47** illustrated in **FIG. 38** is similar to blank **46** and includes a finger tab **175**.

[00139] Blank **48** illustrated in **FIG. 39**, shows the arrangement of lapping glue flap **126** adjacent to minor panel **124**, with abbreviated access flap **150** and common line end points **145** and **146**. Blank **49** illustrated in **FIG. 40** is similar to blank **48** and includes a finger tab **175**.

[00140] **FIG. 41** displays blank **50**. As can be seen, blank **50** differs from other blanks in that it does not have tuck tab score line **171**. Instead blank **50** has an alternate tuck tab **179** or end lip **179**. Blank **51** displayed in **FIG. 42** is similar to blank **50** and includes a finger notch **175** with an abbreviated access flap **150** extending to hinge **140**.

[00141] Turning to **FIG. 43**, a carton **52** is displayed similar to carton **50** but lapping glue flap **126** appears on the opposite side of the blank. Therein, lapping glue flap **126** is adjacent minor panel **124**. **FIG. 44** illustrates blank **53** which is similar to blank **52** and includes a finger notch **175** with an abbreviated access flap **150** extending to hinge **140**.

[00142] In some examples, the lapping glue flap may be adhered to the outside surface of a panel and in other examples, the lapping glue flap may be adhered to the inside surface of a panel.

[00143] **DIMENSIONS**

[00144] Dimensions of the major and minor panels and concomitant dimensions of the major and minor flaps change or are adjusted to accommodate the articles which will fill the box. The dimensions of the first and second major panels are altered depending upon the amount of surface area of the article, i.e., the surface area of the sheet articles. The dimensions of the first and second minor panels are altered depending upon the quantity of the article, i.e., the number of articles in the stack of sheets. In the example of a stack of sheet articles, the sheets may be folded thus reducing the requisite

surface area of the first and second major panels but increasing the surface area of minor panels (and therefore the height of the filled carton).

[00145] It may be apparent then that whether a panel is termed the major or minor panel, the blank and carton may have major panels which are smaller than its minor panels and the blank or carton may have major panels which are larger than its minor panels. It is sufficed to say that the panel dimensions are adjustable to accommodate the packaged article(s) for the assembled carton.

[00146] The size and dimensions of the carton may vary depending upon the nature of the articles that are to be stored in the carton. In some examples, the carton may be a hexahedral-shape. In other examples, the carton may be parallelepipedal-shaped. For examples of rectangular shaped cartons, the height of a carton can correspond to the width of the first and second minor panels, the length of a carton can correspond to the distance between score lines 115 and 116, and the width of the carton can correspond to the width of the first and second major panels. In the example of blanks and cartons which will be used to produce cartons filled with dryer sheets, any quantity of sheets may be accommodated. For a 40 sheet carton example, the height of the carton could be about 1 1/4 inches (3.2 cm), the length about 7 inches (17.8 cm), and the width about 4 1/4 inches (10.8 cm). For a 80 sheet carton example, the height could be expected to about 2 inches (5.1 cm). For a 120 sheet carton example, the height would typically be in the range of about 2 1/4 inches (5.7 cm) to 2 3/4 inches (7 cm) and the length and width about the same as for the 40 sheet carton example. For a 160 sheet carton example, the height could be about 3 3/8 inches (8.6 cm) and the length and width the about same as for the 40 sheet carton example. For a 200 sheet carton example, the height could be about 4 inches (10.2 cm) and the length and width the about same as for the 40 sheet carton example. For a 240 sheet carton example, the height could be about 3 3/8 inches (11.7 cm) and the length and width the about same as for the 40 sheet carton example. It

should be understood that the height and width of the panels can be changed to accommodate whatever sized article(s) may be desired to fill the carton.

[00147] METHODS OF ASSEMBLING FOLDING CARTONS

[00148] Blank structures disclosed also enhance the production speed or efficiency during the folding, erection, filling, closing and sealing phases of the manufacturing operation. Blanks prepared from the die-cut press can be fed to an assembly line preparatory to carton filling. In some examples, the blank has already received a printed graphic and/or coating. During this stage of manufacture, a stack of blanks can be loaded into a magazine. Each blank may be taken from the magazine and fed through a folding machine (often called a "fodler-gluer") in a manner so that an adhesive is applied to the lapping glue flap. After an adhesive is applied, the lapping glue flap is then folded adjacent a panel and adheres to that panel. The entire blank can be made flat again for loading into a magazine to be processed at a filling line.

[00149] Depending upon the surface characteristics of the particular carton blank being folded and glued, a glue must be selected which provides the best combination of adhesive strength and low cost. Examples of glues which might be utilized include cold glues including cold-resin glues as well as hot glues. The adhesive may be applied in any acceptable conventional manner including by rotary disc or spot glue injectors.

[00150] When some cold-resin glues are used with ordinary clay-coated paperboard, those cold-resin glues usually penetrate the clay coating and ink to impregnate the fibrous mass of the carton blank. The result is a bond sufficient to "pull fiber", i.e., sufficient to tear the paperboard of one or both glued together panels of the carton blank, when the carton is stressed or opened at that glue seam.

[00151] In one such exemplary method, an erected carton **60** illustrated in **FIG. 45** is formed from the blank **10** depicted in **FIG. 1**. The carton **60** is formed by adhering lapping glue flap **125** (now **225** in the carton) to second minor panel **124** (now **224** in the carton). As has been previously articulated, lapping glue flaps (or flaps), minor flaps, and major flaps may optionally include perforated rules of any style or affixing means for adhesive assistance. The perforated rules or affixing means for adhesive assistance can help facilitate the adhesive in penetrating the surface of the fiberboard or other material including any coating. When the flaps include perforated rules or affixing means for adhesive assistance then glue can be applied to the area or areas of the flaps which include the perforated rules or affixing means for adhesive assistance. However, when the flaps include perforated rules or affixing means for adhesive assistance, then glue can be applied to the area or areas of the flaps which include and do not include the perforated rules or affixing means for adhesive assistance.

[00152] It should also be noted that when glue is applied to the lapping glue flap, the entire surface of the lapping glue flap can be covered by the adhesive or in other examples, a bead of glue which does not cover an entire surface may be applied. The advantage of the bead is realized in that when the carton is assembled, the adhering panel will also overlap with a portion of the lapping glue flap and having adhesive between the access flap and the lapping glue flap may make opening the access flap more difficult. It is still contemplated that adhesive applied over the surface area of a lapping glue flap which overlaps with a portion of the access flap can still be practiced and in some respects may be advantageous. In examples where a continuous glue seam is applied along the lapping glue flap, less wear on the fabricating equipment results and reduces maintenance costs. This inherently also results in greater efficiency as the equipment is less prone to fail and more cartons can be processed.

[00153] The partially assembled carton with an adhesively applied lapping glue flap can be stored as a flat resting packing in a conventional way such as in the magazine of a cardboard box producing machine. The folding and assembling of such a prefabricated packaging can be carried out in conventional ways, whereby the flat box form can be folded and erected into a desired angular position and various articles may be added to the carton in filling lines. Once filled, any unfolded remaining side end walls can be folded and additional adhesive applied to appropriate areas followed by closure of the remaining side end walls to seal or close the filled carton. When sheeted articles are the desired articles to fill the carton, various configurations of the sheets can be stacked in various manners. In one example, the sheeted articles are interfolded. In another example, the sheeted articles are not interfolded.

[00154] In another step of an exemplary method, the carton is squared and minor flaps from one side of the carton (such as **134** now **234** and **138** now **238** or **133** now **233** and **137** now **237**) are folded inwardly. Selection of which side of minor flaps is folded first is chosen by an operator and conventionally set on the equipment in the filling lines.

[00155] For filled cartons, another step in the exemplary process typically involves placement of the desired articles inside the erected carton. The filling lines can place articles such as sheets in the carton. The loading of the package with dryer sheets, handkerchiefs, napkins or the like, can be done by inserting the same from the carton's side prior to closing all of the end side walls.

[00156] Still another exemplary process step with the carton filled (or if an empty carton is desired unfilled), involves closing any remaining minor flaps from the second side of the carton. A pair of minor flaps such as **134** now **234** and **138** now **238** or **133** now **233** and **137** now **237** are folded inwardly typically at right angles to their adjoining panels.

[00157] Another step in the exemplary method involves application of an adhesive to the minor flaps. This step can be performed simultaneously or in a series of steps to minor flaps on both sides of the carton. Inside major flaps **131** (now **231**) and **132** (now **232**) are folded into and adhere to the nearby minor flaps. Finally, glue is also applied (again in any acceptable conventional manner) to the inside major flaps **231** and **232** and outside major flaps **135** (now **235**) and **136** (now **236**) are folded in to adhere to the inside major flaps **231** and **232** respectively. It is contemplated that inside major flaps **231** and **232** can be outside major flaps and outside major flaps **235** and **236** can be inside major flaps depending on how the configuration of blanks and cartons are desired. In such an example, the outside major flaps are folded in the last step and adhered to the inside major flaps.

[00158] In an another method for constructing cartons, an erected carton formed from the blank **30** illustrated in **FIG. 20** is depicted in **FIG. 56**. The carton **80** is formed by in part by a step of adhering lapping glue flap **126** (now **226**) to first major panel **121** (now **221**). In another step of this exemplary method, the carton is squared and minor flaps from one side of the carton (such as **134** now **234** and **138** now **238** or **133** now **233** and **137** now **237**) are folded inwardly. For filled cartons, the next step in the process typically involves placement of the desired articles inside the erected carton. With the carton filled, minor flaps from the second side of the carton (such as **134** now **234** and **138** now **238** or **133** now **233** and **137** now **237**) are folded inwardly typically at right angles to their adjoining panels.

[00159] Another step in this exemplary process includes applying adhesive to the minor flaps. Inside major flaps **131** (now **231**) and **132** (now **232**) are folded into and adhere to the nearby minor flaps. Next, glue is also applied to the inside major flaps **231** and **232** and outside major flaps **135** (now **235**) and **136** (now **236**) are folded in to adhere to the inside major flaps **231** and **232** respectively.

[00160] As can be seen in **FIG. 45**, wherein reference numerals corresponding to those of **FIG. 1** are 100 greater, the lapping glue flap **225** desirably extends no more than about 20% of the distance from the score cutoff **220** to the score line **214**. In some instance is may be preferable to have a lapping glue flap **219** which extends as much as about 50% of the distance from the score cutoff **220** to the score line **214**. It is contemplated that the lapping glue flap **219** can span a distance from about 10% to about 50% so of the distance from the score cutoff **220** to the score line **214**.

[00161] As can be seen in **FIG. 56**, the lapping glue flap **226** desirably extends no more than about 20% or so of the distance from the score cutoff **227** to the score line **212**. In some instances is may be preferable to have a lapping glue flap **226** which extends as much as about 100% of the distance from the score cutoff **227** to the score line **212**. It is contemplated that the lapping glue flap **226** can span a distance from about 10% to about 100% so of the distance from the score cutoff **220** to the score line **214**.

[00162] **CARTONS**

[00163] Folding cartons can be containers for sales, storage and shipping packages of various designs which are delivered ready-to-use in flat form or are already squared and filled and ready for distribution. Folding cartons can be prepared from blanks of predetermined configurations. In light of some of the illustrated blanks produced here as examples and some of the blanks not illustrated a number of cartons can be constructed.

[00164] All of the blanks previously described can be erected into cartons of corresponding configurations (blanks **10-53** would correspond with cartons **60-103**). The blanks depicted and the cartons that follow are but a few examples of the scope of the forms which can be practiced. For brevity, cartons corresponding to the blanks illustrated are illustrated only to assist the reader and one skilled in the art. However, it is contemplated that a

carton can be folded and constructed from each of the blanks disclosed herein as well as others which have features described but not illustrated.

[00165] Again for brevity but by way of illustrating how the cartons appear, a number of cartons which correspond to some of the blanks will be described. To assist the reader, the enumerated features of the cartons are numbered so that they correspond to the enumerated features of the blanks. Inasmuch, the features of the cartons have a value equal to the number of the feature displayed in the blanks plus a value of 100 (hence, a primary fold line **111** in a blank corresponds to a primary fold line **211** in a carton).

[00166] An example of an unfilled carton is illustrated in **FIG. 45**. Carton **60** comprises primary fold lines **211, 212, 213, 214, 215, and 216**. Carton **60** also includes two cutoffs **219 and 220**. The primary fold lines (also called score lines) and cutoffs demarcate or otherwise perimetrically define various panels and flaps. Lapping glue flap **225** (also called glue flap or lapping glue flap) is demarcated by fold line **211** and cutoff **219**. Major panel **221** is demarcated by fold lines **211, 212, 215, and 216**. Fold lines **215 and 216** also demarcate a separation between major panel **221** and a pair of major flaps **231 and 232** (not illustrated) respectively. Minor panel **222** is defined by fold lines **212, 213, 215, and 216**. Fold lines **215 and 216** also demarcate a separation between the minor panel and a pair of minor flaps **233 and 234** respectively (not illustrated). A second major panel **223** is demarcated by fold lines **213, 214, 215, and 216**. Fold lines **215 and 216** demarcate a separation between second major panel **223** and a second pair of major flaps **235 and 236** (not illustrated) respectively. A second minor panel **224** is demarcated by score lines **214, 215, 216, and cutoff 220**. Fold lines **215 and 216** also demarcate a separation between a second pair of minor flaps **237 and 238** (not illustrated). Carton **60** further has the feature that the lapping glue flap **225** is adhered to the inside surface of the second minor panel **224**.

[00167] Depending upon the desired presentation and function of a carton, it may be convenient to refer to the various panels and flaps relative to their display orientation. In one desired orientation, panel **221** may be thought of as the “bottom” panel. Bottom panel **221** also has a first end wall or cover flap **231** and a second end wall or cover flap **232** (not illustrated) separated from bottom panel **221** by score lines **215** and **216** respectively. Bottom panel **221** is adjacent a lapping glue flap **225** along score line **211**. Bottom panel **221** is also adjacent a “rear” panel **222** along score line **212**. Rear panel **222** has a first side wall **233** (not illustrated) and a second side wall **234** (not illustrated) and is separated from both by score lines **215** and **216** respectively. Adjacent the rear panel **222** along score line **213** is a “top” panel **223** having a first end wall or cover flap **235** and a second end wall or cover flap **236** (not illustrated) separated from top panel **223** by score lines **215** and **216** respectively. Adjacent top panel **223** along score line **214** is a “front” panel **224**. The front panel **224** also has a first side wall **237** (not illustrated) and a second side wall **238** (not illustrated) separated from front panel **224** by score lines **215** and **216** respectively. Front panel **224** terminates at cutoff **220**. The lapping glue flap **225** adjacent the bottom panel **221** terminates at cutoff **219**.

[00168] Turning to **FIG. 46** carton **61** is further described as having a finger notch (or finger tab or thumb tab) **275** demarcated by a finger notch cut **276** which intersects the tuck tab cut **272** at a first finger notch end point **277** and a second finger notch end point **278**. In the example depicted of carton **61**, the finger notch **275** appears hemispherical- (or arch-) shaped; however, the finger notch can take the form of other shapes (for brevity, not depicted) including squares, rectangles, polygons, irregular polygons, ellipsoids, and ovals so long as the shape provides space for a finger or instrument to grasp the tuck tab **270**. It is contemplated that lapping glue flap **225** can extend behind the entire gap of finger notch **275** area and further extend behind the tuck tab **270**. In other examples (not depicted) the lapping glue flap **225** can

extend behind the entire gap of finger notch **275** area and not substantially extend behind the tuck tab **270**.

[00169] **FIG. 47** displays carton **60** in an open box configuration where the lines of separation have all been severed. In the open configuration, it is possible to see minor flaps **234** and **238** as well as portions of the lapping glue flap **226**. **FIG. 48** displays carton **61** in an open box configuration and also including a finger notch **275** and a larger portion of lapping glue flap **226**.

[00170] Turning to **FIG. 49**, a carton **64** has an alternative access flap **290** wherein the lines of weakness **291** and **292** are continuous zipper cuts running from line end points **245** and **246** to tuck tab end points **273** and **274** respectively. Carton **65** in **FIG. 50** displays an access flap **290** with common line end points **245** and **246** where the second minor panel **224** also includes a finger notch **275**.

[00171] Now in **FIG. 51**, a carton **66** is displayed with an alternative access flap **294** including lines of separation **295**, **296**, **297**, and **298**. Lines **295**, **296**, **297**, and **298** are two pairs of partially die cut lines. Lines **295** and **297** which are substantially parallel and spaced apart by about ¼ inch (or 0.6 cm) constitute one flank of the access flap **294**. Lines **296** and **298** which are also substantially parallel and spaced apart by about ¼ inch (or 0.6 cm) constitute another flank of the access flap **294**. Lines **295** and **296** are partial cuts through the outer surface of the carton **66** while lines **297** and **298** are partial cuts through the inner surface or opposite side of the carton **66**. Lines **295** and **296** as displayed in carton **66** are on the outer perimeter portion of the access flap **294** while lines **297** and **298** are on the inner perimeter portion of the access flap **294**. Carton **67** in **FIG. 52** is similar to blank **66** but also includes a finger notch **275**.

[00172] Now turning to carton **68** in **FIG. 53**, another aspect of the access flap **294** can be observed. Therein, lines **295** and **297** run from common line end point **245** to conjoin or otherwise meet at a first tear point **259**. Lines **296**

and **298** run from common line end point **246** to conjoin or otherwise meet at a second tear point **260**. In carton **68**, tear points **259** and **260** are coincident with tuck tab score line **271** and common line end points **245** and **246** are coincident with score line **213**.

[00173] The carton **76** illustrated in **FIG. 54** has an abbreviated form of access flap **250** with hinge **240** coincident with score line **217** and a plurality of line end points **241**, **242**, **243**, and **244**. Carton **77** in **FIG. 55** shows a similar carton further including a finger notch **275**.

[00174] Now turning to **FIG. 56**, carton **80** assembled from blank **30** includes a major panel **221** demarcated by score lines **212**, **215** and **216** and by cutoff **227**. A second minor panel **224** is demarcated by score lines **214**, **215**, **216**, and **218**. Lapping glue flap **226** is demarcated by score line **218** and cutoff **228**. Placement of lapping glue flap **226** in carton **80** results in an assembled carton in which the lapping glue flap **226** is adhered to major panel **221**, whereas the arrangement placing the lapping glue flap **225** of carton **60** results in an assembled carton in which the lapping glue flap **225** is adhered to minor panel **224**. Carton **81** depicted in **FIG. 57** shows a carton similar to carton **80** and including a finger notch **275**.

[00175] In cartons depicted herein (such as carton **60** and **80**) the lapping glue flaps **225** and **226** may be adhered to the interior surface of the respective panels (such as panels **224** and **221** respectively). While in either arrangement the lapping glue flaps **225** and **226** could be adhered to the outside surface of a panel (again, panels **224** and **221** respectively).

[00176] Carton **84** illustrated in **FIG. 58**, shows the arrangement of lapping glue flap **226** adhered to major panel **221**, with access flap **290**. Carton **85** illustrated in **FIG. 59** is similar to carton **84** and includes a finger tab **275**.

[00177] Carton **86** illustrated in **FIG. 60**, shows the arrangement of lapping glue flap **226** adhered to major panel **221**, with access flap **294** and a plurality of line

end points **241**, **242**, **243**, and **244**. Carton **87** illustrated in **FIG. 61** is similar to carton **86** and includes a finger tab **275**.

[00178] Turning to **FIG. 62**, a carton **96** is depicted and shows the arrangement of lapping glue flap **226** adhered to major panel **221**, with abbreviated access flap **250** with hinge **240** and a plurality of line end points **241**, **242**, **243**, and **244**. Carton **97** illustrated in **FIG. 63** is similar to carton **96** and includes a finger tab **275**.

[00179] Now turning to the example found in **FIG. 64**, a carton **100** is illustrated. As can be seen, carton **100** differs from some of the other depicted cartons in that it lacks tuck tab score line **271**. In some examples, the tuck tab is not perimetrically defined by visible lines of demarcation. Referring to the example in **FIG. 64**, a carton **100** is displayed with an alternative tuck tab (or lip end) **279**. As can be seen, the example of carton **100** differs from the example of carton **60** in that carton **60** does not have tuck tab score line **271**. Instead, the access flap **250** illustrated in **FIG. 64** has lip end **179** demarcated by cut **272**. It is contemplated that blank and carton configurations which lack the tuck tab score line **271** will be preferable for erected cartons with smaller quantities of articles and shorter minor panels.

[00180] As previously articulated, the blanks lacking a tuck tab score line **171** may have lines of separation which vary. Likewise, It is contemplated that carton configurations which lack the tuck tab score line **271** can also have different lines of separation. Furthermore, it is contemplated that cartons lacking tuck tab score line **271** will be preferable for cartons filled with smaller quantities of articles and standing with short minor panels.

[00181] **LOCKING TABS**

[00182] Another feature convenient to the consumer or end-user for reclosure of an access flap are locking tabs. Locking tabs (also called reclosure assists) may be formed as a result of the consumers first opening of an access flap.

The locking tabs function to provide ease of reopening and a neat reclosed appearance while maintaining the access flap in substantially the same plane or planes as the surrounding panel or panels when the carton is reclosed.

- [00183] The partially cut score lines used as one mode for the lines of separation forming the access flap portions in the top and front panels of the carton as previously mentioned are of the inside-outside double cut score type. This construction provides partial thickness locking tabs (or reclosure assists) of a particularly reliable nature but which are not so stiff as to make the reopening of the cover difficult. They also The partially cut lines of weakness can be cut 5% to 85% of the way through the thickness of a panel; however, a depth of approximately one-half the thickness of the paperboard or other material is preferred.
- [00184] At least two forms of locking tabs may be used. As illustrated in **FIG. 47**, locking tabs **229**, **230**, **261**, **262**, **263**, and **264** are displayed. Ply locking tabs are formed when ply separation occurs along lines of separation. Zipper locking tabs are formed when perforation separation occurs along lines of separation. Ply locking tabs **229** and **230** may be formed whether the lines of separation on a panel are of the partial reverse cut type with the outside cut on the outer perimeter or with the outside cut on the inner perimeter. In addition, ply locking tabs may be formed whether the lines of separation have multiple end points such as **241**, **242**, **243**, and **244** or common end points **245** and **246**. When there are common end points, the lock tabs will typically taper to the respective common end points. Ply locking tabs **229** and **230** secure the access flap by either giving the access flap a place to rest (which makes the access flap appear unified with the panel from which it separates) or by overlapping the flap as it passes by the ply locking tabs. Zipper locking tabs **261**, **262**, **263** and **264** function by realigning the zipper teeth back into a configuration before the perforations were severed.

[00185] The access flaps of the several blanks and cartons can be punched out or cut out by other techniques from one or more of the two panel surfaces forming such that the access flaps remain attached to the box along a hinge such as **139** or **140** (when referring to the blanks) and **239** or **240** (when referring to the cartons) which can coincide with fold lines **113**, **117**, **213**, and **217** respectively.

[00186] Carton structures disclosed are easily openable and may more simply and reliably be opened by the end user without the need for special tools or appliances, yet which are resistant to the compression loads typically experienced during shipping and handling of the carton.

[00187] OPENING OPERATION

[00188] Carton structures disclosed may be designed to be easily openable and may more simply and reliably be opened by the end user without the need for special tools or appliances, yet which is resistant to the compression loads typically experienced during shipping and handling of the carton.

[00189] As seen in various blanks and cartons described herein, partially cut double-cut scores are formed by way of an inner and outer cut in the paperboard which run parallel to each one another. By so providing these cut score lines, when the end user applies an upward force or opening force on the tuck tab (or pull tab) provided between the pairs of cut score lines, ply separation occurs in the regions between the inner and outer cut score lines. Continued pulling of the pull tab causes complete separation of the opening flap along the lines of separation to allow the end user unobstructed access to the contents of the carton.

[00190] The access flaps herein described may be conveniently opened using different techniques. In one technique, a consumer applies pressure toward the interior of the box near a tuck tab cut. Application of sufficient pressure causes the lines of separation in segments **167** and **168** to sever the access

flap from the panel in which segments **167** and **168** exist. As the lines of separation in segments **167** and **168** disjoin the access flap from the panel, the consumer lifts the access flap in the direction of the panel with segments **165** and **166** thus further severing segments **167** and **168** until the severance reaches segments **165** and **166**. Continued application of an upward force then severs the access flap from the panel in which segments **165** and **166** exist along segments **165** and **166** until the severance stops at a hinge. The access flap can then be closed, reclosed, or reopened while pivoting along the axis of the hinge. The opening of the access flap using this technique does not require a finger notch adjacent the access flap but a finger notch may be incorporated.

[00191] In a second technique, a consumer applies an outward pressure from the interior of the box by inserting a finger or fingernail behind the access flap at a tuck tab cut. In this regard, it is preferable to have a finger notch adjacent the access flap to facilitate grasping the access flap. Application of sufficient pressure outwardly causes the lines of separation in segments **167** and **168** to sever the access flap from the panel in which segments **167** and **168** exist. As the lines of separation in segments **167** and **168** disjoin the access flap from the panel, the consumer lifts the access flap in the direction of the panel with segments **165** and **166** thus further severing segments **167** and **168** until the severance reaches segments **165** and **166**. Continued application of an upward force then severs the access flap from the panel in which segments **165** and **166** exist along segments **165** and **166** until the severance stops at a hinge. The access flap can then be closed, reclosed, or reopened while pivoting along the axis of the hinge.

[00192] The opening of the carton may also be reclosable by means of a double jointed flap which possess a first hinge which allows the entire access flap to pivot and which possesses a second hinge which allows a portion of the access flap to pivot. The double jointing of the flap eases reclosure of the carton as well as assisting in the opening of the flap.

[00193] In describing the other techniques of opening, it may be helpful to refer to the procedure in a relative perspective to the carton panels. When it is desired to use one of the fabric softener sheets, the consumer will push against the bottom of an access flap such as **250** or **290**. Lines of weakness **257** and **258** will permit severance of the connections between the access flap and the front panel **224** followed by severance of the connections along lines of weakness **251**, **252**, **253**, and **254** between the access flap and the top panel **223** except for score line **213** or **217** wherein the access flap will remain attached to the top panel **223**. Once the perforations have been severed, the flap can remain opened as seen in **FIGs. 47, 48, and 65**. Severance of the lines of weakness creates a product access opening seen in **FIG. 65**. When the consumer desires to remove a sheet, he/she will hold back the access flap and grasp the fabric softening sheet **298**.

[00194] Notably, the access flap for opening the carton does not have to extend to the bottom of the front panel or from another perspective, the access flap does not fully extend completely through the panel where opening is initiated.

[00195] **DUAL MODE OF DISPENSING**

[00196] In some of the examples of blanks and cartons, an opened carton functions to enable a consumer to grasp articles in multiple ways through a single opening. This dual mode of dispensing gives the end-user the choice of removing single or multiple articles at a time from the open carton. One mode of dispensing is performed by grasping one article at a time. The second mode is a group mode dispensing of a plurality of articles without having to disassociate them from each other.

[00197] As illustrated by the example in **FIG. 65**, a plurality of sheets **298** are illustrated in a filled carton **100**. A dispensing carton for stacked sheets is thus provided that enables the end-user to select one sheet from the broader depicted opening or to select a number of sheets from the narrower depicted opening. When a plurality of sheets are removed, the sheets do not have to

be disassociated from one another. This example carton is parallelepipedal-shaped and has an irregular hexagon-shaped dispensing opening.

[00198] One type of sheet article that could be dispensed from cartons of this disclosure is a fabric softener sheet. Fabric softener sheets have generally been provided to consumers in a variety of forms including rolls where the each sheet is separated by perforations. Fabric softener sheets have also taken the form of stacked interleaved sheets and stacked non-interleaved sheets. Sheets may take various forms, but commonly are rectangular in shape. Some sheets known for use in house-hold products are folded dove tail sheets. Sheets which fill the various configurations of the cartons can be stacked so that they are or are not interfolded and may be woven or non-woven material. Another example of a sheet material is a fibrous polymeric material such as polyester or rayon.

[00199] RECLOSING OPERATION

[00200] When the consumer has removed the dryer sheet from the carton, the carton may be reclosed by grasping the access flap and pushing it back to an unopened conformation.

[00201] In one conformation, the access flap reoccupies the location before the lines of separation were severed such as the carton displayed in **FIG. 45**. In another conformation, if the access flap is depressed sufficiently that the tuck tab or the bottom edge **272** of an access flap stays behind (or is tucked behind) either the front panel or the lapping glue flap or both (not illustrated). In another conformation, the tuck tab is tucked between the front panel and the lapping glue flap (not illustrated). The convenience and ease associated with reclosing the access flap may be attributable to the operation of hinges such as in the examples with hinge **239** and examples with hinge **240**. Furthermore, when score line **214** can act as hinge further easing the reclosure of an access flap.

[00202] The tuck tab and lapping glue flap may function as tucking means for permitting opening and reclosing an access flap without disassembly of the carton.

[00203] One use of the reclosable access flap is to minimize unwanted escape of perfume into the air when the sheets are not being used and furthermore to help protect the sheet from moisture and other elements in the air.

[00204] While the blanks, cartons, and methods have been described and illustrated in conjunction with a number of specific configurations, those skilled in the art will appreciate that variations and modifications may be made without departing from the principles herein illustrated, described, and claimed. The present invention, as defined by the appended claims, may be embodied in other specific forms without departing from its spirit or essential characteristics. The blanks, cartons, and methods described herein are to be considered in all respects as only illustrative, and not restrictive. All changes which come within the meaning and range of equivalency of the claims are to be embraced within their scope.